

# The Cornell Countryman

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## LIGHTNING AND LIGHTNING CONDUCTORS

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IN the mythology of the Greeks, thunder was the weapon of Jupiter with which he ruled the heavens and the earth from his throne on Mount Olympus. These same Greeks, little realizing the importance of their discovery, found out that amber, or "electron," when rubbed briskly, developed a force that was capable of attracting certain other bodies, and forthwith "electricity" received its name. Man's knowledge of this great science, however, remained a complete blank for many ages until in 1600 an Englishman performed experiments with amber and glass rods, which aroused other scientists to action, the result being that there were soon developed many pieces of electrical apparatus that now constitute part of the standard equipment of every physics laboratory. Machines were built for making electricity, the Leyden Jar was devised for storing it and many experiments were tried but none with any definite end in view. It remained for our great statesman and common sense scientist, Benjamin Franklin, about 1750, to draw a practical lesson from these discoveries. After extensive and wonderfully direct studies of the new experiments he boldly stated and promptly proved, by means of his historic, silken kite flown in a thunder storm, that lightning and the electricity of the amber-rod were one and the same in principle tho varying greatly in magnitude. With this theory proven correct Franklin laid down the law that buildings

could be protected against destruction from lightning by the installation of lightning rods or conductors. This law stands today practically unquestioned, the only points on which controversies have arisen being questions of details as to the installation of the rods.

Before considering the laws governing the correct installation of lightning conductors we must first discuss the characteristics of the form of electricity which causes lightning. For the purposes of a popular article, electricity defies definition because it has none of the concrete tangible characteristics of the objects with which the average man is familiar. Physicists have studied electricity only through its performances, not directly from the substance itself for the very simple reason that it has no substance and cannot be seen. As a result of these studies we are informed that electricity is a peculiar form of molecular disturbance which under suitable conditions may exist anywhere in nature. The physicists have found that this disturbance appears as two distinct types or classes, Dynamic, or actively moving electricity, and Static or stationary electricity. That of the first class is commercially manufactured in small quantities by chemical batteries, or in practically unlimited quantities by power-driven dynamos, and it may be stored up in cells called storage batteries where it exists not really as electricity but as chemical compounds which under favorable conditions will

change back to other chemical compounds and in so doing give back or recreate the electricity stored in them. This class, as its name indicates, is essentially active in its nature and must flow round and round in a circuit to and from the generator in order to exist.

Static electricity is the kind that can be produced by rubbing amber, glass, rubber, furs, or other substances and it has the peculiar property of being able to exist for a long time as electricity on the surface of the material in which it was produced or on the surface of a body to which it may be transferred. A body on the surface of which static electricity exists is said to be "charged." If this charge is of such a nature as to attract a certain class of substances it is called a positive charge; one that repels these same substances is called a negative charge or a charge of negative sign. Two bodies having the same kind of a charge repel each other, while if one is positive and the other negative they attract each other and if they come close enough, the static electricity becomes, for the instant, excessively dynamic and the more heavily charged body discharges in the form of a spark or flash into the other, thereby somewhat overcharging the other, which promptly discharges back into the first. This interchanging is repeated five or six times until the charges in the two bodies are very nearly the same and most of the available energy is used up in friction in going back and forth through the air. This balancing up process goes in with an intensity depending in the size of the charge and with a rapidity of probably about one million interchanges a second. This rapid back and forth movement of the current that flows at each discharge causes it to be an "alternating" current and adds very much to the difficulty of its control.

One other important property of charged bodies should now be briefly noted and that is their ability to produce by "induction" charges of opposite sign in other bodies through intervening air but without any actual dis-

charge taking place from one to the other. A body carrying such an induced charge behaves in nearly every way as if it were regularly charged.

This brings us to the direct consideration of lightning which may be defined as the path followed by a charge of electricity flowing back and forth between unequally charged clouds, or between a cloud and the earth. The electricity is of course invisible but in passing through the air it heats it up to a white heat thus producing the light which we know as lightning. Just how the clouds become charged is an interesting study but it must necessarily always remain a matter of conjecture and we will not consider it here. The peculiar black color of "thunder clouds" is due to the effect of the electrical charge in the cloud upon the water vapor of which it is composed, an effect which can easily be reproduced in the laboratory.

Lightning discharges to earth have been divided by Lodge,\* into two general classes, A—those due to a steadily increasing electric strain between the cloud and the object struck, as when a thunder cloud slowly floats over a barn; and B—those due to an impulsive rush into the striking cloud of a charge received directly or by induction from another cloud nearby.

Flashes of class A prepare their path to the ground by induction in a most leisurely manner and always strike the highest and most sharply pointed portion of the object struck. It undoubtedly often happens that flashes of this class are averted by the use of a number of sharp points extending upward from a lightning conductor on a building because just so fast as the cloud tries to build up, by induction, a great difference in electrical pressure between the building and itself, these points permit the induced charge to relieve itself by a gradual sputtering known as "brush" discharge up to the cloud before the strain gets so great as to cause a

\*"Lightning conductors and Lightning Guards."

lightning flash. Even if the points in this way do not wholly prevent this class of lightning they certainly do decrease its intensity if they have time enough in which to act and in addition they offer very attractive striking points to class A flashes and in this way insure their getting into the rod. If much rain is falling from a cloud it is practically impossible for a steady strain flash to occur because each rain drop carries from the cloud to the earth its share of electricity, thus equalizing the pressure between them sufficiently to prevent the setting up of dangerous conditions.

Class B flashes, however, present a very different problem. In this case we have above the building a cloud which, because it is itself struck from another cloud, becomes in a moment tremendously overcharged and it instantly relieves itself not back to the other cloud but down to earth because the path to earth is easier. Hence there is no time for the charge to prepare at its leisure a path for itself down to the sharp, glittering point of a lightning rod, but it discharges blindly down to earth and it may strike the unprotected peak of some small dormer window in the side of a roof instead of striking the rod on the higher main gable as an A flash would have done. An A flash would pass by a tall lightning rod topped by a ball in order to strike a lower one topped by a sharp point because it prefers to enter rods through points, but an impulsive flash cares not for the shape of the terminal of the rod it strikes, a ball being just as attractive to it as a point. Lodge compares an A flash to a small stream of water trickling down a hillside, readily turning aside to pick an easier path while a B flash is like an avalanche plunging headlong into the valley below.

There is one path, however, which all kinds of flashes prefer to any but that down a good lightning rod and that path is down a column of air, possibly a little moist, that is not quite as dense as the air around it. This condition exists above the ventilator of a barn just filled with new

hay, above the chimney from which hot gases are merging, above a flock of wet sheep huddled together and steaming in the field, or above a heated plow team resting on a knoll. On buildings where these conditions may exist, the lightning rod point should be placed in the center of the air column, not to one side, because the lightning does not travel there, and it will not jump far aside from so easy a path as the warm air gives. The farmer must not decide from this that barn ventilators should be removed but rather that good lightning conductors should be properly installed.

The behavior of a lightning discharge once it has struck a conductor has direct bearing on the installation and selection of the rod. Because of the fact that lightning "alternates" at the rate of about a million alternations a second, it objects strongly to turning corners, the sharper the turn the more it objects to following it and the more likely it is to jump away from the rod at such a point into some other object, possibly shattering the object and certainly making a spark amply capable, under favorable conditions, of starting a fire. For this reason the rod should be somewhat flexible and be carried around all turns with as long and easy a curve as possible.

While the electricity is most ready to leave the rod at the corners, it also has a tendency to "side flash" or leave the rod on even a straight run. The presence of an area of metal which the electricity can jump over to and charge is the prime cause of side flashes and while large areas like tin roofs or large metal tanks offer the most attractive marks for such discharges, even small areas like the surface of a hay carrier track in a barn, a screen door or the barrel of a gun on the opposite side of a wall from the rod, have been known to induce side flashes. A person near a rod or near metal suddenly charged by a side flash is thus liable to be struck and the flash may easily be strong enough to kill. Where the flash is near a tin roof or a hay track the greatest danger is of

course from the heat of the spark which may cause fire.

Experiment has shown that the electricity of lightning flashes does not have time to get into the main body of the metal of the rod but travels in a thin outer layer of the rod and in the air around it. For this reason, what is known as the "conductivity" of the metal composing the rod, makes practically no difference; what little choice there is in this respect being, for reasons too technical to discuss here, in favor of the poorer conductor. Thus, looked at from this point of view only, iron is in one way really a little better than copper as material for lightning rods. Other considerations, however, enter into the question of the kind of metal to be selected, the principal among them being the greater durability of copper and its freedom from detrimental rusting at any joints which have to be made. The result of this being that, while copper rods cost more than iron ones, they are now used more generally than any other kind. The form of the rod may be either a flexible many-stranded cable, a broad thin ribbon, or a thin walled tube, the order of excellence being about as given. A rigid conductor with an avoidable joint anywhere in it is distinctly to be condemned. Cable conductors should be about  $\frac{1}{2}$  inch in diameter; and ribbons of about  $\frac{1}{8}$  inch by  $\frac{3}{4}$  inch cross section, smaller conductors would be liable to be burned up by the heat of the large current flowing in with an extra heavy discharge.

One other danger from side flashes should be mentioned here and that is relative to wire fences. Lightning may strike a tree carrying a wire fence, side flash along the fence and flash again from the fence to live stock standing near it with fatal results, instances being known where several animals were killed by one main flash. In one case every joint for a quarter of a mile of a linked wire fence was welded together by a side flash of this nature. For this reason every wire fence should be grounded at about every fifth or sixth post by a copper or

iron wire nailed so as to touch the fencing and set well into the ground either when the post is set or afterwards in a hole made with a crowbar.

For specific instructions as to the installation of lightning conductors on buildings I will quote from the 1901 report of the English Lightning Research Committee the rules substantially as given by them.

"1. Two main lightning rods, one on each end of the building should be provided, extending from the top of each tower, spire, prominent gable or high chimney-stack by the most direct course to earth. It is not advisable to insulate the rods nor to keep them away from the surface of the building.

"2. Horizontal conductors should connect all the vertical rods (a) along the ridge and (b) at or near the ground line, this lower conductor being recommended evidently to guard against side flash at this point.

"3. The upper horizontal conductor should be fitted with sharp points two to four feet high at intervals of 20 or 30 feet.

"4. Short vertical rods also should be erected along less prominent parts of the building and connected with the upper horizontal conductor, thus affording protection against flashes of the impulsive type that may strike any part of the roof of a building.

"5. All roof metals, such as finials, ridging, rain water and ventilating pipes, roof valleys, gutters, hay carrier tracks, etc., should be connected with the horizontal conductors.

"6. All large masses of metal in the building should be connected with the earth, either directly or by means of the lower horizontal conductor.

"7. Where roofs are partially or wholly metal-lined they should be connected with the earth by means of vertical rods at several points.

"8. Gas pipes should be kept as far away as possible from the lightning conductor in order to avoid side flashes which might ignite leaking gas.

"9. All connections to the earth should be very thoroughly made. Moisture is absolutely essential to a



good ground and for that reason spots as shady and as near the discharge of a water pipe as possible should be selected. The conductor should be permanently attached to a sheet of metal, copper or iron about a yard square and this buried as deep as possible so as to insure the presence of moisture at all times. A bed of broken coke or charcoal about the ground plate serves to hold the moisture and helps to dissipate a lightning discharge. When the hole is filled it should not be rounded up but left concave to catch the surface water."

Finally, it should be said that while it may be possible to cite cases in which roddeed houses have not been protected from damage by lightning it is never-the-less a fact that a good lightning conductor properly installed and well-grounded, affords a very high degree of safety from this danger which is a very considerable one in almost all country districts. The total cost of an efficient system is small, not as much as the value of many a good cow, and no farmer should run the needless risk which he incurs in not having his buildings protected by lightning conductors.

## SOUTHERN ALASKA

By Arthur M. Kruse, '11

EDITOR'S NOTE: Mr. Kruse spent his summer vacation in Alaska, working on a survey. It is to him that we are indebted not only for the pictures which accompany this article but for the cover picture as well.

OUR party of about twenty persons sailed from Seattle, June 14, 1908, for Alaska. The voyage was not on an open sea but rather through channels lying between submerged mountain ranges of rugged beauty and subtle charms of color. For three days we gazed upon a broken coast line whose shades changed with the hour of day and upon islands wooded with heavy masses of trees and underbrush. One's remembrance of the voyage is that of a shifting panorama of color, of primitive wildness and grandeur, underlaid with the glamour and power of the ocean.

We landed at Ketchikan before proceeding to the mainland for the summer. Thereafter for three months we moved over many miles of country seeing the variations in topography and vegetation. Ketchikan is situated on an island about seventy miles from the mouth of the Unuk river, up which we wished to journey. On striking the mainland at the mouth of the river we encountered a dense growth of forest; spruce and hemlock were the predominating species of trees, their diameters ranging from

one to six feet. They reached toward the sky to a great height and their limbs covered with trailing and hanging vines and mosses created an effect like that of a jungle. Around them grew many species of ferns of magnificent size, bushes and such flowers as violets, forget-me-nots and dogwood, and the curious growth known as the Devil's Club, a native Alaskan plant. The hot summer sun, the long days and the high rainfall during the open months caused the rich and rapid development of luxuriant vegetation. It is hard to conceive of a more beautiful type of scenery than that afforded by this region.

Because of its primitive wildness this country is a paradise for the hunter or angler. The small mountain streams abound with trout, the cut-throat and dolly varden. During the summer, the salmon come in from salt water to spawn in every small stream available. To this fact may be accredited the great number of trout, as salmon eggs form their relish of diet. The best catch by hook and line recorded for last summer was twenty-one trout in twenty-five minutes; salmon eggs



A BIT OF ALASKAN SCENERY.

were used as bait. Ducks and geese were seen in great numbers and frequently found their way to the camp table. Brown bears were occasionally met with, while the sight of a black bear was a daily occurrence. Several were shot as fresh meat was demanded. Wolves, wolverines, lynx, marten, otter and mink live in the wooded hill-lands in abundant numbers. Goats were frequently sighted on the mountain peaks. Deer are plentiful on the islands along the coast but there is a scarcity on the mainland due to the ravages of wolves. The great quantity of game can be ascribed to the protection afforded by the government from would-be sportsmen.

As we proceeded up the Unuk river, the type of scene changed. The timber becomes thinner and the underbrush denser as one advances inland. Many of the mountain slopes are covered with an almost impenetrable mass of alder and devil's club. Blue berries and salmon berries are small fruits that flourish abundantly in the woods and on the hillsides. The character of the country grows more rugged. The snow-capped

mountains of the interior stand out in bare peaks and long ridges giving the impression of scantier timber and vegetative growth but the lower slopes are covered with the same extent of lofty forests. Here and there the wooded slopes are broken by great glaciers and rock slides.

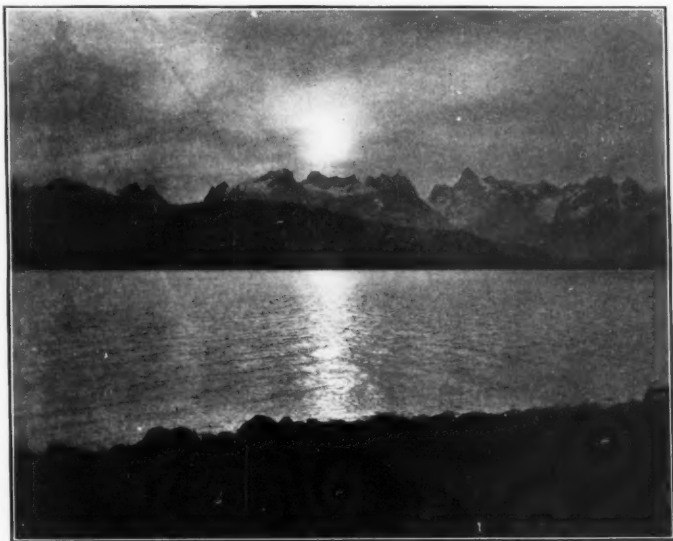
The Unuk river like most Alaskan streams is very swift. The river branches frequently; its channels are intensely rugged and full of sweepers (log jams, etc.). Luckily we were able to pack our camping outfit and supplies from one camp to another by making use of a good mining road which led up along the river. We traveled this way for thirteen miles. At this distance up the river we encountered the most strenuous work of the summer. The road at this point ended abruptly at some great rock bluffs which extended for about two miles. The trail over the bluffs was one long and tedious climb and somewhat dangerous. To pack our three tons of outfit over this trail would have been a great undertaking. By making use of a boat belonging to the mining company we were able to

get our outfit around the bluffs. We accomplished this by crossing the river and lining, which is towing a boat upstream. On account of the shallowness of the river near the shore, it necessitated our wading in the water to pull the boat. The cold glacier water, together with quicksands, made this operation extremely difficult and unpleasant. After repeated trips every day for over a week, we finally managed to reach a point above the bluffs.

For the next month and a half our journey was over ground, broken and rocky, but passing this we finally struck a better section of country. Many times we made side trips to the tops of ridges and mountains. In starting to climb a mountain one first encountered timber and brush which gradually thinned as the altitude became higher, until finally at the upper timber line wide stretches of heather and scattered balsams came into view. In passing over the snow fields patches of the red snow plant (*Sphaerella nivalis*) were occasionally seen. On reaching the top a magnifi-

cent panorama opened up; towards the west could be noted the ridges of rock and timber, less rugged perhaps, than those to the east and less bright in color. Valleys wound their way between the mountains which resembled white waves of the ocean. Glaciers filled in many depressions and often hung over into the deeper valleys.

Such was the country as we saw it. The ideas that we gained of the resources of southern Alaska makes some consideration of them necessary to a good description of that land. The timber area is very large; one-fourth of the interior below an altitude of 1,000 feet is heavily wooded. The forests are mainly coniferous, Sitka spruce being the prominent tree while the valuable yellow cedar and also hemlock are to be found in great masses. These great forests are practically untouched owing to the government's prohibiting the exportation of timber. It is hard to impart an idea of the tremendous extent of the Alaskan forests or of their luxuriance. The tillable land in



AN ALASKAN SUNRISE.

southern Alaska is estimated at about 3,000,000 acres. Hardy garden vegetables such as potatoes, turnips, and onions are cultivated in many districts. Grasses are one of the most valuable plant products; timothy, blue grass, orchard grass, wild barley and rye flourish there.

It has been through mining that the country has become and will become more thoroughly settled. The mineral wealth of southern Alaska while not as great as that of the northern part or Yukon district is immense. Gold is the chief source of mineral wealth, but silver and copper are also found in considerable quantities. Great areas of land have been staked off as placer claims; many

extensive mines are in operation.

The impression left by Alaska is that of a wild, majestic country; things there, are as they were in the Great West before the white man came and when the great rivers rolled to the sea and heard no sound "save their own dashing." In the hazy twilights we saw snow-capped peaks, black forests and white waterfalls and heard the roar of falling water and its murmurs as it rushed down the rocky channels. In the nights we sometimes saw the northern lights as they leaped and glowed in the heavens. It is no wonder that the Indians called this country the Great Land.

## STUDENT LEADERS

*By Prof. J. L. Stone*

*Professor of Agronomy at Cornell University*

I AM asked to write briefly regarding the ways that students may best be leaders in their home communities when returning there after graduation. The first and most important way that a student should lead his community is in the matter of good farming. This does not imply that good farming is more important than good citizenship or some other things, but a young man attends an Agricultural College primarily to learn improved agriculture and there are many farmers, some good and some bad, who still doubt the value of agricultural education as furnished by the colleges. During the first years after a student's entry into practical agriculture his farming will be observed most critically. While he may be active in many community affairs, the weight of his influence will largely be determined by the quality of the farming he does. If his neighbors see that in his farming he is visionary and impractical they will not take much stock in what he says regarding school or road matters, but if after a few seasons he takes his place among the very best farmers of

the community his advice and influence will be sought by all interests of the community to which he shows himself friendly.

The attitude assumed by the college graduate towards the farmers of the community will largely determine their reception of him. If he assumes an attitude of superiority and indifference or of condescension and patronage he will get little attention and much of ridicule. He must make himself one of them and then if he actually has knowledge or skill superior to theirs, he naturally and inevitably becomes their leader.

As to the instrumentalities to be used by the graduate in effective leadership it seems to me that in most communities there are already enough. New organizations or new movements will usually not be required. The instrumentalities for work that I would name as usually found ready to hand are the public schools, the church, the grange or agricultural club, the farmers' institutes, the agricultural fair, the community administration, the good roads

movement, conservation of natural resources, etc.

The public school system of the States is a matter of national pride and it well may be, but the matter of making it as effective as it ought to be and of adapting it to our changing conditions as we now view them is a problem of far reaching importance and great difficulty. No graduate of the College of Agriculture need feel that this problem is unworthy of his most careful attention and best efforts and no doubt the local school board of his home town will gladly receive him into its councils.

Much is said these days regarding the ineffectiveness of the country church and it is true that many farmers do not seem to be reached by it and are not giving it their support, yet the fact remains that for one who wishes to make himself effective for good in his community the church affords a field of activity and a means of building up his personal influence that he cannot afford to ignore. Those same farmers who have little or nothing to do with the church will respect and trust the consistent church worker more than the man of equal ability who holds himself aloof from the church. It is true, however, that we would all despise the man who would ally himself to the church simply because of the influence he thought he would thus gain or the material benefit he would derive.

The grange has now so thoroughly demonstrated its adaptation to rural social conditions and has already extended its influence to such a large proportion of our rural communities, that it would seem wise for those who aspire to marked usefulness in such communities to become active workers in such granges as already exist or by their help may be established.

The agricultural fair is an institution that is woefully failing to accomplish its proper mission. Started as an educational agency, it has degenerated until it is now an open question whether it does not do more

harm than benefit to the community. Thoughtful people are waking up to this fact and the time is ripe for a general movement for improving the moral tone of these gatherings and causing the really educational and uplifting exhibitions to displace much that is now only demoralizing.

The recently organized association of ex-students could scarcely find a more promising field for organized effort than this.

The other instrumentalities for doing good or getting good that I have named and others, that circumstances may make desirable, will appeal to different persons in different ways according to their individual abilities and adaptations, but in all of them educated leadership is needed and usually eagerly sought. The college bred farmer has a fertile field opened before him and he must study how to make himself most effective. If he attempts to enter into every movement he is sure to scatter his energies and over-tax his powers so as to render himself ineffective. On the other hand, to selfishly devote his powers to securing only personal profit or pleasure is unworthy of the man and the institution he represents.

If a person possesses the characteristics that fit him for political leadership, such as a place in the state legislature and has a taste for such activities, there probably is no more direct and satisfactory course to pursue than, after graduation from an Agricultural College, to enter upon practical farming, do such work as will attract attention to its merit, take part in many of the activities of the community and help to fight some of the community's battles. Farmers would rather be represented by one of their own number than by the doctor or lawyer or hotel keeper providing there is one in sight who in education and general efficiency is the equal of the others. Even the county politicians like to have an occasional good clean farmer in nomination just to "strengthen the ticket" and "help to carry the rural districts."



## TO A GRADUATING CLASS, AND OTHERS

By L. H. Bailey

[Abstract of Remarks at the Assembly on May 20.]

**T**HERE are some things that would say to those who are about to leave us, to take their place with the men and women who do the good work of the world.

This College of Agriculture aims to train its students for two kinds of usefulness;—to enable them to secure a better livelihood, and to fill them with the idea of service to the community. Your first concern will be to establish yourselves in a good business or occupation, and this is also your duty; but I shall be disappointed if every one of you do not also develop leadership in his neighborhood or among his fellows.

I ask you to consider well the difference between leadership and commandership. The leader never, or seldom gives stern orders. The commander is necessary in a military organization, but in a self-acting society his influence is evil. The commander says, "Go, boys;" the leader says, "Come, boys." The followers of the real leader may not know that they are led. The power of the leader is personal and spiritual. He moulds men, never drives them.

Last week I walked up to the College with a workman whom I had missed for months. I asked him where he had been, and why? He had been working in another city on a car line. A new superintendent had come on the line, and the first day he had called the men together and had commanded them what to do. "We all knew that before," the man told me, "and so we all quit. But," he continued, "the old superintendent was a fine man. He used to come out to the car barn and explain all about the work and lecture to us on electricity and machinery." It was apparent that the difference between the two superintendents lay in the method.

So, your method of approach to the men with whom you work is of the

first importance. Everywhere you will find men and women who know more than you know. Some of them may be the most ignorant workmen. Recognize their knowledge and their skill, and give them the honor that all knowledge and all skill, no matter how small, is entitled to receive. Some of you have practiced at wrestling; but you will find a man in every farm community who can excel you in throwing a pig. The pig does not follow the orderly rules of the game, but he is likely to win it.

You must be properly conscious of your short comings and make no boastful display of your knowledge. With many men with whom you come in contact, physical skill counts for more than intellectual training. Recognize the fact and give them their due. There will be a man who can outdo you in sticking a pig, or binding a load of hay, or in getting a wagon out of a rut, or in tying up a horse's tail, or in adjusting a clevis on a plow. Do not disregard the small things. Life is made up of small and homely things and a man masters in big things only because he has first mastered in little things. Some persons never get beyond the small things.

But while you are mastering the little things, be careful that you keep your ideals. You will be discouraged for a time. You will not see how or where your ideals will apply. Be patient. Remember that you are getting hold. You are going through a process of adjustment to the conditions of life. Be sure that you will excel in the thing that you undertake. Gradually you will find that you can apply an ideal, or a new purpose, here and there; then you have begun to win.

You must always keep your thinking ahead of your working. We are often told that we must practice what

we preach. That is very wrong advice. It is poor preaching that does not set its stakes at least a little ahead of the day's work. When we catch

up with our preaching, we cease going. I would give you Emerson's advice, to hitch your wagon to a star; but be sure that you stay in the wagon.

## OUR WINTER BIRDS AND THE CODLING MOTH

*By R. D. Anthony, '10*

No one likes to find a worm in a nice looking apple or still less to find only half a worm, nor does the presence of the worm add to the commercial value of the apple. In fact, in 1898, Professor Slingerland estimated that the codling-moth, which is responsible for the wormy apple, caused a loss of \$3,000,000 a year, in New York state alone. In addition to this direct loss there is a large indirect loss in the time and money spent in spraying to keep this insect in check. When we consider this loss we can see how important it is for the horticulturist to take advantage of all means of reducing the numbers of this pest. One of the most efficient methods is through the agency of our winter birds.

To see how the winter birds become valuable, let us review the life history of the insect. The small, brownish moth appears about the time the petals of the flower fall and the eggs are laid on the small fruit. The worm hatches from the egg and eats its way into the apple. The apple usually ripens prematurely and falls. Just before or after the apple falls many of the worms crawl out and find some secure place to spin their cocoon and spend the winter. This place is generally the under side of a loose piece of bark. In the spring they emerge from here as the moth.

On a number of apple trees around the campus the loose flakes of bark were examined this spring. On the under side of many of them the winter cocoon of the moth was found and in some of these there was a fat, juicy larva curled up, waiting for warmer weather; but with more than half of them there was a small hole through

the bark either just under the cocoon or close to it, and the cocoon was torn open and the larva gone. This is the work of certain of our winter birds.

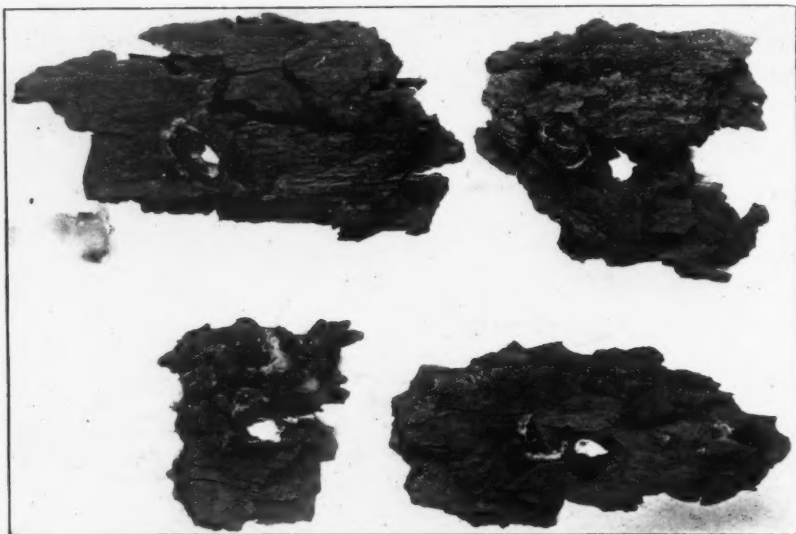
When we want to find the cocoons it is necessary to pull off the loose pieces of bark and examine the under side but a woodpecker seems to have an instinct which tells him what piece of bark hides a good meal for him. The single blow from his powerful beak does the rest. Usually he will go through the bark and strikes squarely onto the cocoon but even if he is a little to one side he has a means of securing the larva. The tip of a woodpecker's tongue is hardened and furnished with many strong barbs like a fish spear and this can be extended from one inch to an inch and a half beyond the end of the bill so that even a good sized cavity under the bark can be thoroughly explored from a single puncture.

The accompanying photograph is one of the under side of four flakes of bark and shows the remains of the cocoons and the holes made by the bill of the bird that extracted the larvæ. In two of them the bill came through directly onto the cocoon and in two others it was at the side.

More than half of the cocoons found on the trees that were examined had been destroyed by the birds and of the fourteen found on one tree, all but two were torn open. The Entomologist at the Michigan Experiment Station reports that in almost every case when the cocoons were concealed under flakes of bark the birds found them; and most of the economic ornithologists give similar reports.

If the worm makes its cocoon near a crevice or where it can be seen from the outside, the chickadees and the brown creepers, the birds that investigate every crack and cranny in the bark, are sure to get at it. These birds are easily identified. The chickadee is a small, gray bird with a black cap with a high call that sounds like his own name and, indeed, from

The destruction of codling-moths is but one of many beneficial acts that we can credit to these birds that add so pleasant a touch of life to the desolate, snow-swept, orchards and woods. Ants, beetles, borers, plant lice eggs, and larvæ of many of the injurious insects form the greater amount of their food and it is to their work that our forests and many of our



UNDER SIDE OF APPLE TREE BARK, SHOWING HOLES MADE BY WOODPECKER AND THE EMPTIED COCOONS FROM WHICH HE HAS EXTRACTED THE CODLING MOTH LARVAE.

which he gets his name. The brown creeper is just what his name would indicate, a small brown bird that creeps up the tree trunks and hunts and hunts incessantly.

The birds with the heavier beaks that drill through the bark are the hairy and downy woodpeckers and sometimes the nuthatch. The woodpeckers are the common black and white marked ones that we see in the winter, the downy being only a smaller edition of his big brother, the hairy. The nuthatch is the white and gray bird with the black cap who scampers around the tree trunks and says, "hank" when you disturb him.

old orchards owe their comparative freedom from pests.

If we admit the value of these birds in the orchard the next question is how can we get them around the orchard and keep them there? The winter birds will stay wherever food is plentiful and they are protected from molestation. If we put up a few strips of suet and meat and an occasional crust of bread and keep the small boy with the air gun in the house we may be pretty certain that our trees will receive a daily inspection by a well trained corps of "insecticides" and that fewer apples will have to go into the culls because of worms.

## AGRICULTURAL LEGISLATION

*As announced by the State Department of Agriculture*

Many changes in the Agricultural law will be made if Governor Hughes signs all the amendments now awaiting his action. Seven agricultural bills have already been signed and are as follows:

Mr. Boshart's, defining adulterated cream as that containing less than 18 per cent of fat or to which a foreign substance has been added, to take effect immediately.

Mr. Boshart's, establishing a standard for cider vinegar, to take effect immediately.

Senator Alld's repealing two conflicting sections of the law relating to animal diseases, to take effect immediately.

A bill of Senator Raines providing for a more rigid supervision by the State Department of Agriculture to prevent the bringing of diseased nursery stock into New York State from other states. The new law also seeks the extermination of diseases and the brown tail moth and all other insect pests infesting trees, shrubs, and vines. An appropriation of \$25,000 is provided.

Mr. Phillip's appropriating \$40,000 for buildings, etc., for the school of agriculture at Alfred University, to take effect immediately.

Senator Holden's making an appropriation of \$278,000 for buildings on the State Fair Grounds and for the improvement of the grounds, to take effect immediately.

Senator Hamilton's making an appropriation of \$10,000 for an investigation by the State Experiment Station of grape production in Chautauqua County, to take effect immediately.

Agricultural bills still before the Governor are as follows:

Mr. Boshart's appropriating \$10,000 for investigating certain questions relating to the production, transportation and sale of milk and milk prod-

ucts, to take effect when approved by the Governor.

Mr. Boshart's amending the feeding stuffs' law, in reference to labels, etc., to take effect January 1, 1910.

Mr. Boshart's authorizing the Commissioner of Agriculture to accept the work of a veterinarian not in the regular employ of the Department, in exceptional cases, to take effect when approved by the Governor.

Mr. Gray's providing for accurate tests of milk where the payment for milk is based upon these tests and requiring persons making tests to be licensed, to take effect November 1, 1909.

Mr. Lewis' making a provision for the giving of bonds by manufacturers and shippers of butter, cheese and milk under certain conditions, to take effect when approved by the Governor.

Senator Platt's restricting entrance of diseased animals into this state, to take effect when approved by the Governor.

Mr. Shea's bill relating to appraisal and payment for animals condemned on account of glanders, to take effect October 1, 1909.

Mr. Thorn's appropriating \$10,181 for unpaid bills on account of animals and property destroyed during foot and mouth disease outbreak, to take effect when approved by the Governor.

Mr. Boshart's bill further restricting the sale of oleomargine, prohibiting the sale or gift of coloring matter or the use of dairy words or pictures, requiring signs to be prominently displayed in restaurants where this product is used, requiring the article to be sold in packages of five pounds or less, and to be sealed and plainly labeled, showing the name and address of the manufacturer, to take effect when approved by the Governor.

Mr. Boshart's giving the Chief Veterinarian of the Department of Agriculture the same authority to quarantine on account of contagious diseases as now held by the Assistant Commissioners, to take effect when approved by the Governor.

Mr. Callan's requiring the labeling of seeds and a statement of percentage of purity within reasonable limits and an exact statement of the character and amount of certain adulterations, to take effect July 1, 1909.

Mr. Boshart's to prevent frauds in the use of tuberculin and the sale of animals as healthy when they are known to be tuberculous and requiring the permanent marking of animals known to be tuberculous, unless they are to be immediately slaughtered or kept under specified provisions for breeding or dairy purposes, to take effect when approved by the Governor.

Mr. Boshart's establishing a standard for condensed or evaporated milk and requiring the marking of cheese made from skimmed milk or made by a process in which water foreign to

the milk is added to the curd, to take effect when approved by the Governor.

Senator Raines' bill regarding laying quarantine for rabies, posting notices and providing penalty for destroying such notices while they are in force, to take effect when approved by the Governor.

Mr. Scott's permitting the DeRuyter Four County Fair to share in the apportionment of funds for county and town fairs, to take effect when approved by the Governor.

Senator Raines' appropriating \$40,000 for new building at the State Experiment Station, to take effect when approved by the Governor.

Senator Raines' defining the duties of sheriffs and police officers in the enforcement of quarantines on account of diseases of animals and reducing penalties for violation of rabies quarantines, to take effect when approved by the Governor.

Hon. F. C. Platt, of Steuben County is chairman of the Committee on Agriculture in the Senate, and Hon. C. Fred Boshart, of Lewis County is chairman of the Committee on Agriculture in the Assembly.

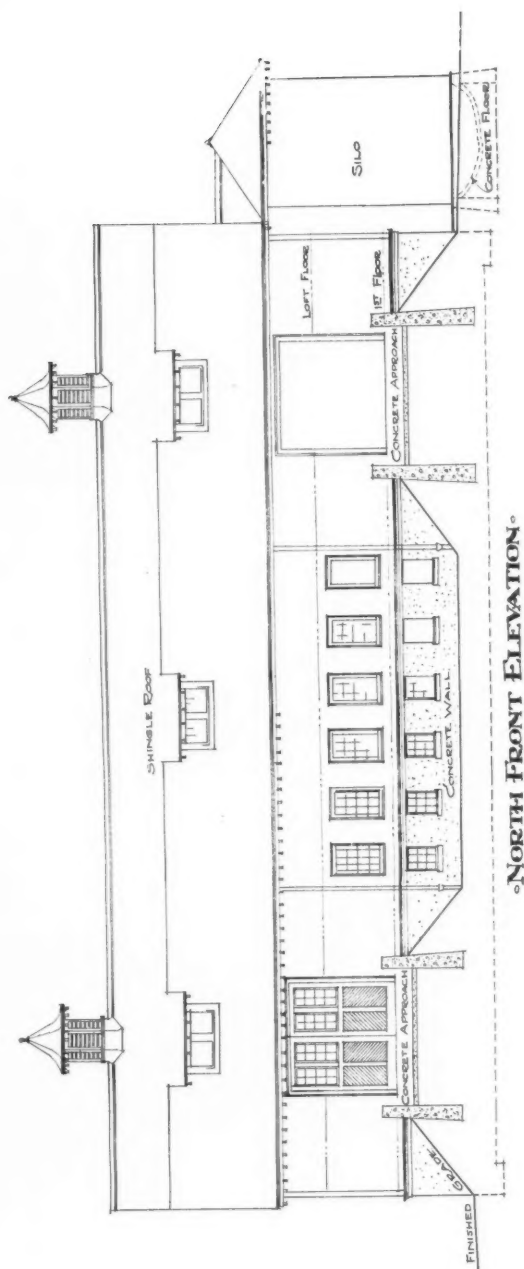
## THE NEW COLLEGE BARN

*W. G. Stephenson, '11*

AT last, we are to have the much needed and long looked for addition to the college buildings, the new barns. Ground has been broken for the foundation and it is expected that the structure will be entirely completed by about November 1. They are to be built on the old Mitchell farm east of the college and across the road from the east end of the athletic field. The need of such a building has long been felt as the old barns have been inadequate for some time. The general shape of the barn is that of the letter U; the main barn forming the base of the "U" and facing the north. It will be one hundred and twenty-five feet long and forty feet wide, with a basement and loft.

The basement affords feed rooms, root cellar, locker-room, bull-pens, etc. On the first or main floor are situated a granary and five large rooms to be used for teaching and demonstration purposes and for storage. The rooms here will be sealed up and finished in much the same way that the rooms in the present animal husbandry building are. Eventually they are to be as pleasant and attractive as possible. On this floor are the driveways, one near each end, the ground being so graded as to make the first floor in this barn practically a basement while the floors on the same level in the wings are to be entirely above ground. There are two such driveways with doors large enough to admit big loads,





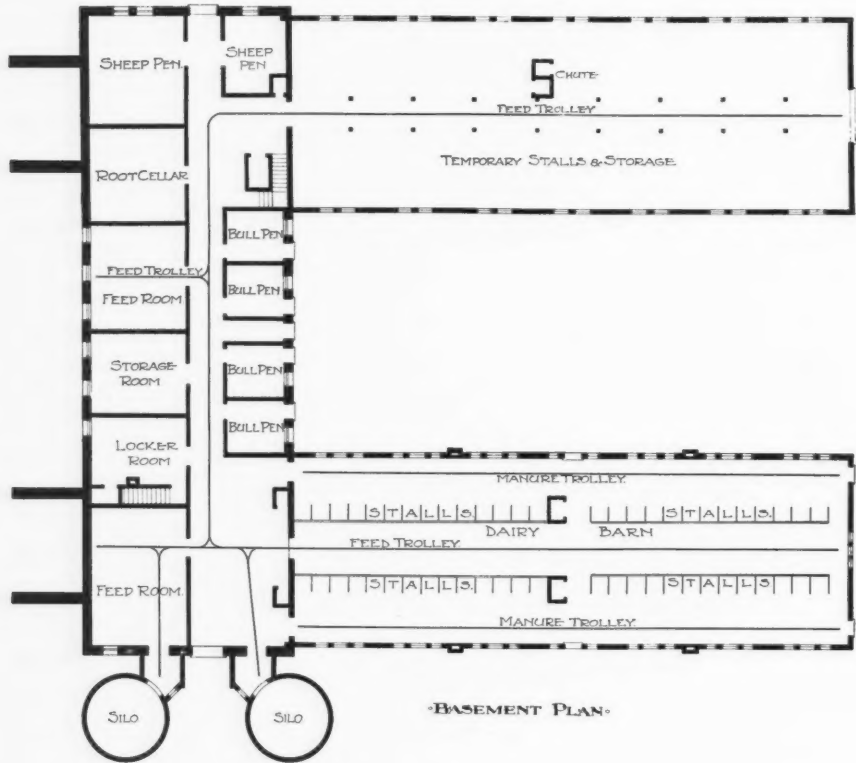
° NORTH FRONT ELEVATION °

THE NEW BARNs AT THE NEW YORK STATE COLLEGE OF AGRICULTURE NOW IN PROCESS OF CONSTRUCTION.

and permitting grain to be unloaded under cover. The second floor or loft will be used principally for the storage of unthrashed grain.

The two wings or arms of the "U" extend south from each end of the

The west wing constitutes the dairy stable and accommodates fifty-six animals. The stable is planned in an ideal way and all the equipment is to be up to date and of the highest order. There are two rows of stanchions, fac-



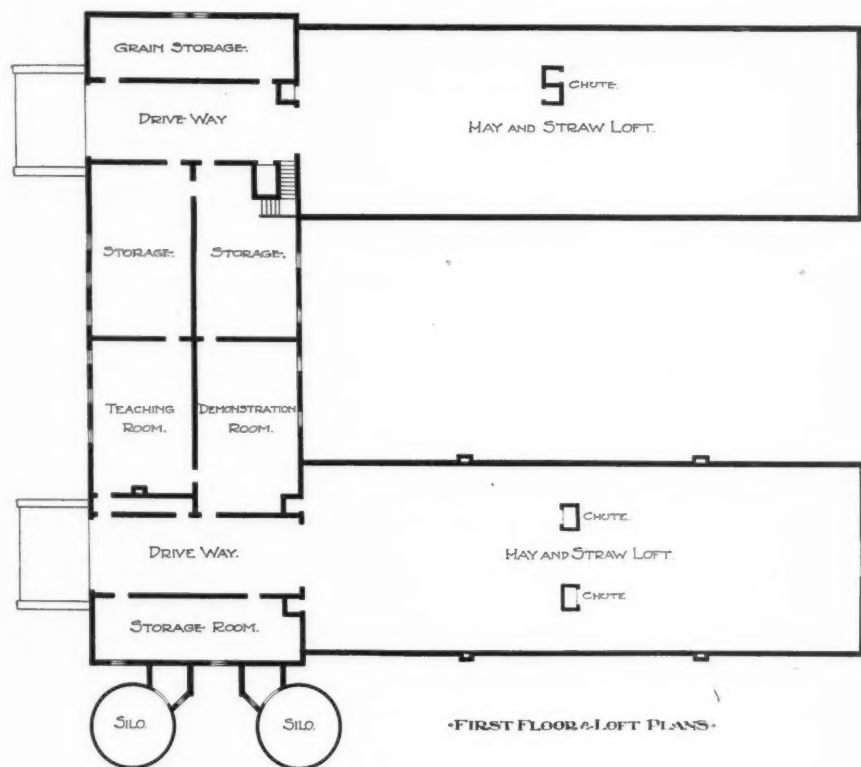
main barn one hundred and eighty-eight feet and are both thirty-seven feet wide. The basement of each is devoted to stabling purposes with room for the storage of forage crops on the floor above, there being but two floors in the wings.

ing each other with feeding trolley and alley between. A few yards west of the center of the dairy wing is located the milk house that will be 16 feet long by 12 feet wide; the customary air space in the walls being filled with shavings. It affords ample room and

facilities for the proper care and storage of the milk.

The east wing is similar in outline to the dairy building and will ultimately be used as a sheep barn but it is probable that the farm teams will be accommodated here until a new horse barn is built. An overhead trolley

The foundation and basement of the entire building is to be of concrete, and the remainder of stud and frame construction with ship-lap siding and shingle roof. Contrary to the expectations of some, these barns are not to be ideal, i. e., not the kind that a very wealthy city man would erect on his



runs the entire length of the main barn and of the wings, as well as connecting with feed rooms and silos. The silos (two in number) are to be 16 feet in diameter by 24 feet high, and located at the west end of the main barn. The silos are to have a concrete foundation and will be of the stave type.

country residence, but are to be such as a good economical farmer would want to build. The silos should have been higher but the architect could not be persuaded to sacrifice architectural symmetry for economy of space. The contract was let to Driscoll Bros. & Co., of Ithaca, N. Y.

## DEPARTMENT PLANS FOR THE SUMMER AND FALL

*Reported by R. D. Anthony, '10*

EDITOR'S NOTE:—Several of the departments have been unable to report their plans in time for this issue as they did not know what money would be allowed them.

**J**UNE and Commencement days bring no respite for the Agriculture staff, for as soon as the last examination paper is corrected the summer's investigation work will be in full swing. The summer's research forms the basis for much of the teaching and serves to keep the college in touch with the problems of the country but it means that the professors and assistants must work twelve months in the year.

### THE DEPARTMENT OF HORTICULTURE

This department expects to conduct a vigorous campaign in the fields of fruit, vegetable and flower culture the coming season. New courses of study are being introduced, and established courses amplified and strengthened. Several important lines of experiment are being planned. The amount of field work possible will of course be largely determined by the money available. It is hoped that orchard survey work in pomology may be extended to add at least one county to the area surveyed, though the failure of the legislature to appropriate money for extension work may prevent this. Grape rot experiments on an extensive commercial scale are being continued in connection with the Experiment Station and in the 75 acre vineyard that has been leased at Romulus. Orchard planting and the establishment of experiments on the home area will occupy considerable attention.

It is also hoped that a survey of the floricultural interests of the state can be inaugurated. The capital involved in these interests is very large and these interests have not received much attention at the hands of the experiment station thus far. An important piece of work which will need close supervision this summer is

the erection of the new forcing-houses. It is hoped that the horticultural group of houses will be ready for use by the opening of the university year. These will give enlarged facilities and better opportunities for studies of greenhouse problems than have been thus far available. Various experiments in vegetables, including variety tests and cultural tests, will be conducted during the summer on the University farm.

Next fall several changes will be made in the courses of study. Professor Wilson has enlarged the scope of the division of pomology by the addition of a needed course on bush and small fruits, and one in advanced pomology.

In vegetable and flower culture, two parallel courses running throughout the year are offered by Professor Judson and Mr. Batchelor. The course in greenhouse construction will be given by Mr. Batchelor the coming year.

In the general field of horticulture, Professor Craig gives a new course entitled nuciculture (nut culture), and also adds one hour to the course in plant breeding, making this a three-hour course under the title of Evolution of Cultivated Plants.

### SOILS DEPARTMENT

In the Soils Department, Professor Fippin plans to put four of the students into Ontario county during the summer for a soil survey of that region and, if sufficient funds are available, the survey of Washington County will be undertaken in connection with the United States Bureau of Soil. A strip of land east of the athletic field has been given to the Department. Here a series of experiments on different soil problems will be carried on throughout the year.

One new course will be added next year on Irrigation and Drainage. It will be a two hour course and will be given in the second term.

#### PLANT BREEDING DEPARTMENT

In Plant Breeding, Dr. Webber will continue the work from last year. In the breeding plats there are 4,500 hybrid tomatoes that will be used to study skin color and its transformation, form and quality of fruit and its transformation, as well as to develop improved varieties. For study along similar lines, 1,000 hybrid peppers have been set out. A large collection of phloxes, including practically every known variety will be used to study the inheritance of form and color. The potato experiments will be continued to determine the extent of bud variations and the value of seed selection. Experiments in the production of variations by inoculation with chemicals and also natural variations and their transmission will be carried on with 2,000 wild *Silene* plants. Several hundred strains of timothy, oats, and wheat are also being tested out on the college farm.

#### DEPARTMENT OF PLANT PATHOLOGY

The plans for this department were given in the April issue of the COUNTRYMAN but there have been a few additions since then. The work for the summer will consist chiefly in the investigation work of which a number of lines are now under way. The summer work of the department is carried on almost entirely in field laboratories in charge of different members of the staff, or of men who are taking graduate work. Mr. Reddick will as usual have full charge of the grape disease investigation, continuing the field laboratory at Romulus on the study and control of the Black Rot of grapes. This work will be carried on, as it has been in the past, in cooperation with Professor Wilson of the Division of Pomology. In addition to this it is expected that investigations on other diseases of grapes, particularly those peculiar to the Chautauqua Belt will be begun

in cooperation with the State Experiment Station at Geneva. Mr. Reddick will have full charge of the disease end of the work, and Mr. C. N. Jensen, a graduate student in the department, will act as his assistant. Mr. Jensen will probably be stationed at Romulus on the Black Rot work.

Mr. E. W. Mitchell, Cornell, '09, will have charge of a field laboratory for the control of Fire Blight in pear orchards. This laboratory will be located on the farm of Mr. Ira Pease, Oswego, N. Y.

Professor H. H. Whetzel will devote a large portion of his time to the investigation of ginseng diseases, for the carrying on of which during the summer the Ginseng Growers' Association of the State have raised a fund of about \$100.00. The work on Hollyhock diseases will also be continued and it is hoped brought to a close this summer.

Some slight changes have been made in the courses in the department for next year. Instead of Course 4, as listed in the catalogue for 1908-09, four separate half year courses will now be offered, as courses 5, 6, 7 and 8. These courses are designed primarily for students specializing along certain lines of Agriculture. The more common diseases of certain crops will be taken up and carefully studied. Course 5, Diseases of Field and Truck Crops will be given the first term of next year. Course 6, Diseases of Fruit and Fruit Trees will be given the second term. These courses are open to all students who have had Plant Pathology 1. Course 7, Diseases of Greenhouse and Florist's Crops, and Course 8, Diseases of Trees and Ornamental Shrubs will be given respectively the first and second terms of 1910-11.

#### THE DAIRY DEPARTMENT

This department had planned to start a series of cow tests among the farmers of the state this summer, but the shortage in the appropriations will prevent this. It may be possible to begin this the first of October.

(Concluded on page 309)



## The Cornell Countryman

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N. R. PEET, Editor

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JUNE, 1909

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### The Appropriations and the Seniors

As we go to press, the question uppermost in the minds of most of us is, "What are the state appropriations for the College to be this year?"

The College of Agriculture draws its funds from two bills, the Maintenance Bill and the Supply Bill. Last year it received \$150,000 under the former, and \$10,000 for additional extension under the latter. This year it was felt that, owing to the increase in the number of students and the growth of each department, the College was justified in asking the legislature for an appropriation of \$200,000, this to include the \$10,000 of the Supply Bill. But contrary to our best hopes, the legislature saw fit to appropriate but \$175,000 in the Maintenance Bill and to continue the \$10,000 item in the Supply Bill. This makes a total of \$185,000 appropriated in place of the \$160,000 of last year; but is also short \$15,000 of the amount that seems absolutely necessary to carry along

the work on its present basis. Neither bill has been signed by the Governor as yet. He is allowed thirty days after the adjournment of the legislature, which occurred this year on April 30, to approve or disapprove them.

It has not been decided just how the \$25,000 increase over last year's appropriation will be used. We are advised by Dean Bailey that it doesn't seem possible to continue all the pieces of extension work and at the same time to keep up with the natural growth of each department. It is still an open question whether it would be more advisable to cut off some of the branches of extension work and allow the remainder of the college work to grow actively, or to keep up all of last year's enterprises and to try to maintain them on their present basis without allowing any to grow. Evidently something must suffer.

It would seem that this is a matter that each of us, and especially the seniors, should make personal. The seniors are going out from here with a training and inspiration which we feel certain they could not have obtained elsewhere. The work is upon them to make good; to impress a notion of the value and importance of this college upon all with whom they may associate. In this way can be created a general demand for increased facilities at this college.

There is another way, perhaps more tangible and effective, that each one can be a factor in securing the funds which an economical and efficient administration deem so necessary, and that is through the Students' Association of which each alumnus and student is a member. We trust that the class of '09, the first to graduate since the formation of this association, will set future classes a good example

by taking a very active interest in this association whose purpose is to obtain strength by union.

### The Old and The New

It is customary for the new COUNTRYMAN board, which has been elected in the spring for the following year, to take charge of the June issue in order that it may receive suggestions and advice from the retiring board; consequently with this issue, the board for 1909-10 takes up its work.

We have witnessed from the inside, the growth and the increasing value of the publication during the past year, and so feel qualified to say something about the administration, which has been responsible for it. The policies have been directed in such a way that the paper not only looks *prosperous* but has been placed on a very sound, business basis. We feel sure that the articles, which the retiring board has obtained or written have been, not only interesting, but of some instructional value as well to our readers. Many of them have been written by authorities and carry the weight which is their attribute. We have witnessed the willingness of these men and women to contribute to our columns and the impression that came with this was that the Editor and Business Manager must be running the COUNTRYMAN about right, if such people were pleased to appear in its columns.

Anything we may say here in an endeavor to express our admiration for the retiring board will, of necessity, carry but mediocre importance. But we can and do desire to express our thanks to them for the excellent standard of the precedents they have set for the present board. We can

appreciate, probably better than any outsider, the honest endeavor that has been required of them and which they have given so freely. May virtue continue to be its own reward.

A new board is about to take up this work. As it has been endeavoring to get out this issue, it has had a glimpse of the work, it has ahead of it; not only the routine that must necessarily accompany such a task, but also the possibilities and the plans under-way which, it is hoped may be developed. Surely such a work cannot be expected of any group as small as ours; the board will need the active co-operation, interest and backing of each and every member of the body it is endeavoring to represent—the students of the College of Agriculture. If you have any idea, that you think the COUNTRYMAN might work out, any suggestion of improvement, or criticism of a fault, we ask you to let us know all about it. It is in this way, and in this way alone, that we can hope to keep up with our reputation.

### The Weather Bureau

Ever since Emerson Hough succeeded in getting his article entitled "Does the Weather Bureau make good?" into the columns of a recent issue of *Everybody's Magazine*, the weather bureau has been the subject for more general free-for-all discussion than any other governmental institution. The COUNTRYMAN feels that it has an added excuse for edging in a few words, in that the primary importance of the weather bureau in this country is its relation to agriculture.

Mr. Hough's article is primarily a thrust at the head or backbone of the service and not at the body. In so far as that is concerned, we would rather

let Chief Willis L. Moore fight his own battles. He is capable as would be any other man who has impressed his worth upon the nation under administrations of differing political faith; having been in the service 32 years, and chief for 14 years.

But so far as Mr. Hough deals with service in general, we really can't believe him. His statement that the service is unduly expensive is a charge which is calculated to win popular favor in this day of commercialism and worship of the "almighty dollar." It is true that the government spends more money on its weather bureau service than any other nation, but it is also more extensive and, what is more important, more efficient (at least the foreigners themselves say so, with all due respect for Mr. Emerson Hough.) The fact that the service was obliged to discontinue publication of its maps from May first to July first on account of lack of funds is evidence that the Bureau has no money to waste.

His statement that the Bureau is explanatory and self-defensive is a very clever attempt to hinder the bureau from defending itself against such unjust and scathing abuse.

The charge implied in his insult to Chief Moore in regard to Mt. Weather being a pleasant summer resort is absolutely false as anyone and everyone is privileged to find out for himself by visiting that notable research observatory. It also refutes his charge that the service is unprogressive and shows no hope of improvement.

Mr. Hough's charge that the service is general and not specific, we understand to mean that it cannot specify the exact place and time of a storm. He cites the Portland disaster, the destruction of Galveston and the recent inaugural day storm. We wish

to state in regard to the former that it is a fact that danger signals were hoisted in the Boston harbor ten hours before the storm and that the head of the Boston station personally tried to prevent the captain of the Portland from sailing. In regard to the disaster at Galveston, it was the tidal wave, and not the storm that did the most damage, the storm was predicted, coast danger signals hoisted, and as a result not a ship was lost in the Gulf. The Bureau could not have prevented the wave nor could it tell exactly where it would strike the coast.

The storm on Inaugural day at Washington which was the immediate cause of all this discussion was clearly a mistake. The records are accessible to the public so that anyone can see that this storm was one of the most erratic, and did not follow the course which nine-tenths of these storms do.

We do not wish to leave the impression, that we believe the weather bureau to be perfect, it has a chance for vast improvement. Personally we would like to have the predictions more local and we would like to receive maps for the entire year. In closing, we desire to express our perfect agreement with the editor of the *Chicago Evening Post* whom we quote: "Does the weather bureau make good? Not wholly; but more nearly so, we feel than Messrs. Hough and Dunn."

## BOOK REVIEWS

THE COUNTRYMAN is in receipt of a book entitled, "Business Organization" by Samuel E. Sparling, Ph.D., assistant professor of political science, University of Wisconsin, and published by The MacMillan Co. The COUNTRYMAN regrets that the book arrived too late to be reviewed in this issue, but assures the author and publisher that it will appear in one of the next issues.

## GENERAL AGRICULTURAL NEWS

The Federal authorities engaged in a large irrigation and land reclamation scheme in western Kansas at an estimated cost to the government of \$350,000, are about to file an injunction against the United States Sugar and Land Co., of Garden City, Kansas, to restrain them from sinking wells which it is alleged would seriously affect the intended improvements and damage the interests of the farmers of that section, who have put their money and time in the project.

The rights of man on land and sea have heretofore been rather clearly defined. It has been generally understood that an individual owned from the center of the earth to the limits of the land on the surface and so on indefinitely into space. But, with the development of the mining industry and the possibility of aerial navigation, the ownership of the earth below and the air above is coming under serious discussion with the possibility that in the future we may have better definitions concerning these points. Within the last twenty years Americans along the Rio Grande have taken with exceptional enterprise, practically all the water from the river at some points for irrigation purposes, depriving the Mexicans of their supply. The matter has been up for diplomatic consideration and some monetary allowance has been made Mexico by our government. A somewhat similar case existed at Garden City, Kansas, arising from the fact that the Coloradans were taking all the water from the Arkansas river and leaving none to flow by Garden City, the river's natural channel. These are comparatively new matters in American legislation and the final decision of the appellate courts will be looked to with much interest.

\* \* \*

*The World's Work* says there is a county in the state of Mississippi, in fact the only county in the nation "where practically every white boy of

school age is working a piece of ground with his own hands as a part of his education—working it, too, under proper direction so that what he does has a definite educational value; working it, too, so as to produce a better yield at a lower cost than the land ever before knew." This statement may well cause the farmers of more favored states to look about them, for such a course of training will have a splendid effect on those Mississippi boys in after years.

\* \* \*

An interesting fact along the dairy line is noted in Europe. Government employees at the German State printing department have taken to drinking milk instead of the national beverage, beer. Among this class, the consumption of milk has been doubled in the last year. The same alarming conditions exist in the State printing office at Vienna and as far back as several years ago "milk booths" were established at Cologne and these have been so successful that now the same milk supply company has decided to put at least eight of these public milk drinking booths in operation in various parts of the same city in much the same way that the American public is now supplied with soda water. Large numbers of men of every station take a glass of milk as they pass, instead of entering nearby saloons. A great number of factory workmen are also substituting milk for beer.

\* \* \*

The prize list of the Fruit Department for the State Fair this year has been greatly changed and enlarged. About \$400.00 additional in prizes are offered. Some of these new prizes are as follows:

Local society Grange collection, collection of box fruit, collection of fruit packages, collection of nursery stock, collection of fruit products, boys' and girls' club collection, boys' and girls' collection.

Not only have these additions been made but many changes in the old list. Some of the prizes for individual varieties have been cut out and the premiums on the more common varieties raised in some cases to \$25.00 for the first prize for a single plate of fruit.

The entry fee has been changed to encourage individual exhibitors. Heretofore the fee was 5% of the first prize competed for, and at least two dollars must be paid. The fee now is 5% of the first prizes competed for, no matter how small that fee may be. Any grower can enter a single plate of fruit without paying an excessive fee.

Previously it was necessary for every exhibitor to go to Syracuse to put up his own fruit. This was impracticable for the growers and the Commission, realizing this fact, has provided for the putting up of individual exhibits wherever such is requested.

The prizes for fruit for the first time this year will be sent out in a little folder by themselves. This is a new departure from the prize list of previous years, and the Commission hopes to be able to place this folder in the hands of every grower.

\* \* \*

The Executive Committee of the American Pomological Society has accepted a joint invitation tendered by The Ontario Fruit Growers' Association, the Niagara District Fruit Growers and The St. Catherines Horticultural Society, to meet at the city of St. Catherines this year. Arrangements are rapidly progressing for a reunion of unusual value and interest at this attractive place on September 14-16, 1909.

An exceptional feature lies in the fact that the Ontario Government has recognized the importance of the coming of this society to Canada by placing a substantial sum of money at the disposal of the committee on arrangements. Professor Craig, secretary of the American Society, reports that an unusually large number of state horticultural societies have appointed delegates to attend the St.

Catherines meeting and this will insure a wide representation and a diversity of interest which will present exceptional opportunity for considering in a satisfactory way legislative questions of interstate significance. It is also to be noted that a great exhibition of Canadian grown, Lake Ontario fruits will be in progress at the time of the meeting affording a splendid opportunity for a study of these northern varieties. The fruit region between Niagara and Toronto is the most extensively cultivated region in Canada. Excursions through this famous section will be arranged for the pleasure and profit of the visitors.

The program may be expected to include the latest and best in the entire field of pomology. Arrangements are now being made for the presentation of subjects of present day importance by the leading authorities. A good time is assured as early September is the most delightful season in the Lake Ontario region.

\* \* \*

At the annual meeting of the Ginseng Growers' Association at Syracuse yesterday, April 28, the Association raised the sum of about \$100.00, which they have placed at the disposal of the department of Plant Pathology, Cornell University to aid in carrying on the investigations on the diseases of ginseng for the coming year. This appears to be the first case in which an association of growers has voluntarily met the State College halfway in a financial cooperation for the investigation of the diseases of their crops. The ginseng growers of the State of New York are composed very largely of business and professional men, though a number of the growers devote their entire time to the growing of this crop. The annual exportation of dried root from this country averages about one million dollars a year, the average price being about \$7.00 a pound. The growing of ginseng is now on a firm financial basis, the cultivated root being worth more in



the market than the wild, and the demand for the same being in excess of supply. Professor Whetzel of the department of Plant Pathology addressed the ginseng growers at the annual meeting above referred to on the subject of the *Alternaria* Blight of Ginseng. The first published account of this disease appeared in THE CORNELL COUNTRYMAN for November 1906. The investigation of this disease has been under way for the past four years and a bulletin on the subject is now in preparation.

\* \* \*

An enthusiastic audience was gathered at the meeting of the Chemung County Boys' Agricultural Club held in the City Hall at Elmira on May 8th.

Mr. Rufus Stanley as chairman of the meeting first introduced, Supt. of Schools, J. W. Deans. Mr. Dean spoke of the opportunities of farmer boys.

The next speaker was Mr. Gould J. Little, School Commission of Chemung Co. Mr. Gould mentioned in his speech some of the defects of the present *Country School*. He deplored the fact that at present, country boys and girls, were in the main, being prepared for clerical positions in the city rather than learning to become intimate with Nature.

Dean Bailey, the next speaker, gave the principal address of the day. He spoke directly to the boys and girls present. He asked them what occupation or profession they intended to follow and explained to them that successful men flocked to the city because of the better conveniences there. The open country needs these improvements and the boys and girls of today must help to establish them. The Dean then spoke of the boys that intended to live in the country. He emphasized two things that each of them must do to be a successful man and farmer. "In the first place, you have got to make good; in the second place, you have got to help somebody else make good." Then he went on to show that the city of Elmira was making good in setting out and planting thousands of trees for the benefit of future generations.

After Dean Bailey's speech, Miss A. G. McCloskey addressed the Club; later, Prof. C. H. Tuck made a few remarks and then Mr. Van Dusen of Horseheads spoke.

## CAMPUS NOTES

At a recent meeting of the faculty of the College of Agriculture several important changes were made in the curriculum. Concerning the required work, Drawing was made elective, Chemistry 6 was made elective but all are required to take Agricultural Chemistry 85. Those not electing Chemistry 6 are only required to take four lecture hours of Agricultural Chemistry 85. A course in Biology was substituted for the required work in Zoology and Entomology. In the sophomore year Soils was made wholly elective and in Physiology there is a choice between Physiology of Domestic Animals, Human Physiology and Plant Physiology. Physical Geography as an alternative for Geology was dropped. A new arrangement of subjects into groups was made and the following rules adopted:

All students except those registered in Rural Art shall have passed before graduation at least fifteen hours of agricultural electives in one of the following groups and at least three hours in each of the others.

In selecting the subjects in the major group the student must obtain the advice and approval of some one Professor or Assistant Professor having charge of a subject within the group, who shall be chosen by the student at the beginning of the sophomore year.

Group A—Farm Crops, Farm Management, Horticulture, Home Economics, Farm Mechanics.

Group B—Animal Husbandry, Poultry Husbandry, Dairy Industry.

Group C—Agricultural Chemistry, Soils, Plant Physiology, Experimental Plant Breeding.

Group D—Plant Pathology, Entomology, Limnology, Rural Economy.

The following Spring Day committee has been appointed from the Agricultural College: Chairman, E. I. Bayer, E. L. D. Seymour, K. C. Livermore, R. D. Anthony, E. G. McCloskey, R. W. Hitchcock, W. W. Fisk, W. H. Grotz, F. N. Darling, R. E. Deuel. Date for Spring Day is May 21st, 1909.

\* \* \*

L. B. Cook, '09, has been appointed as Assistant in the Department of Dairy Industry to fill the vacancy caused by the resignation of Mr. A. W. Ferguson. Mr. Cook also takes the position of City milk inspector which was formerly held by Mr. Ferguson.

\* \* \*

On April 27th, the baseball team of the College of Agriculture defeated the team from the Veterinary College by the score of 10-8. The game was marked by rather loose playing on both sides. The game with the Civil Engineering College scheduled for April 30th was indefinitely postponed.

\* \* \*

The Agricultural baseball team suffered their first defeat May 7th, losing to the Law College team by the score of 7-5.

\* \* \*

At the annual spring elections of Sigma Xi Society the following students from the College of Agriculture were honored: Marshall Baxter Cummings, B.S., M.S., Assistant in horticulture; Early Cunningham Ewing, B.S., B.S. in Agr.; Erret Wallace, B.S. in Agr., and from the class of 1909, Kenneth Carter Livermore and Stephen Franklin Willard, Jr.

\* \* \*

The May Assembly was postponed to the evening of May 20th. This is the last Assembly of the year and a full attendance of both students and faculty is desired.

\* \* \*

Dean L. H. Bailey will be a delegate to meetings of the Association of Agricultural Colleges and Experiment Stations and the National Irrigation Congress to be held at Seattle, Wash., during August, 1909.

The campus seems to have been visited by an epidemic of mumps and the Agricultural College has furnished its full quota of victims, among them being the Editor and Business Manager of the new COUNTRYMAN board.

\* \* \*

On Friday noon, May 7th, a group picture of the senior class of the Agricultural College was taken in front of the main building.

\* \* \*

Among the events scheduled for the month of May are the Inter-college Track Meet on May 14th, Spring Day on May 21st, Intercollege Crew Races on May 22d, and the Annual Picnic for the school children of Tompkins county on May 28th.

\* \* \*

The following men of the class of 1910 were recently elected to Hebs-sa: Roy David Anthony, Grover Coors, Walter Warren Fisk, Vincent James Frost, Freeman Steel Jacoby, Frank Burnette Kelley, Harold Newton Kutschback, Thomas Joseph McInerney, Nelson Rusk Peet, Gad Parker Scoville, Roy John Shepard, Hobart Cone Young.

\* \* \*

We are glad to note that H. C. Young, '10, captain of the varsity cross country team has returned from his home in Batavia where he has been confined with an attack of the mumps.

\* \* \*

The classes in Dairy 43, Animal Husbandry, Farm Management and Poultry Husbandry started on a joint excursion. Monday morning, May 10th. The following places are to be visited the first day: Candee's place at Dewitt and Van Patten's place at Fayetteville are to be visited by poultry students while the rest of the party visits Tallman's place at Fayetteville. Party then visits the farms of W. R. Smith and E. A. Powell at Lakeland, returning to Syracuse for the night. On May 11 the party inspects the farms of H. A. Moyer and Stevens Bros. where they spend the day. All but the dairy students return to Ithaca Tuesday night. On May 12th, dairy students visit Tully



MEMBERS OF FRIGGA FYLGE.

Farms Certified Milk Plant, proceed about noon to Cortland where they inspect the plants of Ekenberg Milk Products Company and Champion Milk Cooler Company and then return to Ithaca.

\* \* \*

In February 1908, at the suggestion of Misses Van Rensselaer and Rose, the women of the Agricultural College organized into a club which has taken "Frigga Fylge" as its name. "Frigga, wife of Wodan, the supreme Anglo Saxon god, was the goddess who brought the blessing of rich harvests; "fylge" means following", hence the name "Frigga Fylge." The purpose of the club as stated in the preamble of its constitution is to unite the women of the College and to further their interests in College affairs. It is to a certain degree a social club to acquaint the girls with each other. It is not supposed to run in opposition to the Agricultural Association but to further the work of that institution

by enabling the women, by united effort, to better accomplish their share of the college work.

[*Department Plans for the Summer and Fall*]

Concluded from page 301.

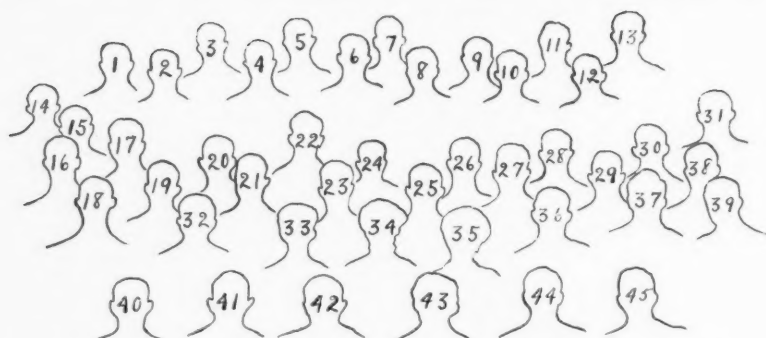
A new course in Creamery and Dairy Management will be offered in the fall.

DEPARTMENT OF SOIL INVESTIGATION

This department is experimenting on the fertilization of grain at different stages of growth and on the use of a fertilizer on different crops in a rotation.

This summer the distribution of soluble salts in cropped and uncropped soils will be studied.

A recent issue of *Science* contained an article by Dr. Lyon describing the new soil tanks that have been built on the farm and their value in conducting soil experiments.



KEY TO PICTURE OF THE CLASS OF 1909 AGRICULTURE. SEE FRONTISPIECE.

1. Stark	13. Palmer	24. Datta	35. Miss Aherne
2. Hallock	14. Wolcott	25. Sprague	36. Bonns
3. Rossman	15. Fullerton	26. Manrow	37. Neal
4. Willard	16. Salisbury	27. Centurion	38. Mitchell
5. Seeley	17. Tuller	28. Avery	39. Bennett
6. Boehler	18. Judson	29. Brown	40. Lawry
7. Hollister	19. Sweeton	30. Myer	41. Livermore
8. Eldridge	20. Siramarkian	31. Bayer	42. Thompson
9. Robeson	21. Robertson	32. Safto	43. Dean Bailey
10. Van Derzee	22. Cook	33. Miss Evans	44. Seymour
11. Cody	23. Yih	34. Miss Jenkins	45. Dematy
12. Foster			

## CANDIDATES FOR THE DEGREE OF Ph.D., 1909

CHARLES FREDERICK CLARK was born at Glover, Vermont. Received early training in district schools and Derby Academy. Graduated from the University of Vermont in 1897. Entered Cornell University in 1904. Appointed Assistant Agronomist in the Experiment Station in 1906. Received the degree of M.S.A. in 1907. At present Instructor in Department of Experimental Plant Breeding. Member of Sigma Nu and Sigma Xi.

MARSHALL BAXTER CUMMINGS, born at North Thetford, Vt. Prepared for college at Thetford Academy, entered the University of Vermont in 1897 and received the degree of B.S. in 1901. Appointed Assistant Horticulturist at University of Vermont in 1901. Instructor in Horticulture and Botany at University of Maine, 1902-'04. Received the degree of M.S. at Maine in 1904. Head of Botany Department at University of Maine, 1904-'07. Assistant in Horticulture at Cornell since 1907.

ARTHUR W. GILBERT was born in 1882 at West Brookfield, Mass. Graduated from Brookfield High

School, 1901. B.S. from Massachusetts Agricultural College and Boston University, June, 1904. M.S.A. from Cornell, June, 1905. Ass't. Prof. of Agronomy and Supervisor of Agr'l. Extension Courses, University of Maine, '05-'07. Elected fellow in Cornell, '08-'09. Member of Alpha Zeta, Sigma Xi, Phi Kappa Phi.

CHESTER DEACON JARVIS was born near London, Ontario. Preparation for college was received at the local high school. He received the degree of B.S.A. from the Ontario Agricultural College in 1899. He was Assistant Horticulturist at his Alma Mater until 1904, when he entered the Graduate Department of Cornell University, registering for the degree of Ph.D. In June, 1906, he accepted the position as Horticulturist of the Storrs Agricultural Experiment Station, Storrs, Conn., which position he now holds. Last fall he secured a leave of absence and returned to Cornell to complete his residence.

HARRY HOUSER LOVE was born in 1880 at Taylorville, Ill. Graduated from the Preparatory School of the Illinois Wesleyan University, Bloom-

ington, Ill., 1900. B.S. from Illinois Wesleyan University, 1904. M.A., 1906. Ass't. in Chemistry at Illinois Wesleyan University, 1902-'04. Ass't. in Plant Breeding and Chemistry at the Illinois Experiment Station, 1904-1907. Member of Tau Kappa Epsilon, Sigma Xi.

JAMES OSCAR MORGAN, born in 1881 at Horse Shoe, N. C. B. Agr., North

Carolina Agricultural and Mechanics College, 1905. Asst. in Farm Management, N. C. Agr. College, 1905-6. M.S.A. Cornell, 1908. Member of Alpha Zeta, Sigma Xi.

JOHN HOUSTON SQUIRES, of Charlotte, N. C., entered Cornell from Virginia Polytechnic Institute where he received the degree of B.S.A. in 1905 and M.S.A. in 1906.

### CANDIDATES FOR THE DEGREE OF M.S. IN AGRICULTURE, 1909

BENI M. CHATTERJEE was born June 19th, 1882, in the village of Duckineswar, Bengal, India. He prepared at his home high school and took his B. A. at the University of Calcutta. He then entered the higher Agricultural College at Silpur, Bengal, and obtained his diploma in 1907. After taking his degree he hopes to go back to India to do what he can for his people.

B. H. CROCHERON received B. S. in Agriculture in June, 1908, and during the summer, following served as agricultural expert on a large Virginia estate. During the past year he has made a survey of the breeding region of eastern Long Island under the Departments of Horticulture and Rural Economics.

MOHINIMOHON DATTA was born in the city of Calcutta, Bengal, on the 20th of October, 1883. He received his school education in Comillah High School and next attended Chittagong College, where he took his intermediate degree. In 1905, he entered the Higher Agr. College at Silpur, where he obtained the H. A. S. degree. He was then sent by the Government of Bengal to this country to further his studies in Agriculture.

EARLY CUNNINGHAM EWING was born in 1886, at Aberdeen, Miss. He prepared in High School at Aberdeen; graduated from Miss. Agricultural and Mechanical College with degree of B. S. in 1906, and from Cornell in 1908 with degree of B. S. A. He has been working for his Master's degree in the Plant Breeding and Plant Physiology Departments. Sigma Xi.

HOWARD B. FROST was born at Dairyland, Ulster Co., N. Y., in 1881, attended district school and worked on his father's farm. After taking the Training Class course at Ellenville High School, he taught country schools four years, meanwhile preparing for college. He received the degree, B.S. in Agr. from Cornell in 1908, specializing in Plant-breeding. President of the Cornell Prohibition League, 1908.

MINNIE JENKINS was born on a farm near Walton, Delaware County, New York. She graduated from the Walton High School in 1903 and in the fall of that year entered the College of Agriculture at Cornell University, from which she received a B. S. A. degree in 1907. Since that time she has been Assistant Bacteriologist in her Alma Mater. She expects to continue this line of work.

HAROLD ELLIS ROSS, B. S. A., Cornell, '06. Born Leadville, Colorado. Early life spent on farm in Tioga County, N. Y. Prepared for college at Waverly High School. Entered college in '02. Since graduation has been Assistant and Instructor in Department of Dairy Industry. Expects to continue teaching.

ELMER S. SAVAGE was born June 15, 1884, at Lancaster, N. H. Prepared for college at Lancaster Academy. Graduated from New Hampshire College, Durham, N. H., in June, 1905, with degree of B. S. A. During two years after leaving college he was Instructor in Dairying at Baron De Hirsch School, Woodbine, New Jersey and manager of Dairy Department of



Brooklawn Farms, Morris Plains, N. J. Entered Cornell, Oct., 1907, for graduate work in Animal Husbandry. Was appointed Assistant in Animal Husbandry, Nov., 1907, and appointed Instructor in same department in October, 1908. Alpha Zeta, Gamma Alpha.

ERRET WALLACE was born in Hants County, Nova Scotia, where he received his elementary education. After two years at the Truro Agricultural School he entered Cornell as a special, but later changed to the regular course and took his B. S. A. with

the class of 1908. He has since been doing graduate work in the Department of Plant Pathology, and has been doing extra work with a Ph.D. in view. Chairman, Plant Doctors, 1908 to 1909. Sigma Xi.

KOLIANG YIH, Cornell B. S. Agr., '08, was born in Foochow, China. He entered with the class of 1909 but took his degree one year ahead and expects to get M. S. A. the coming June, having elected tobacco as his major subject and sugar as his minor subject. He will return to China next year.

#### CANDIDATES FOR THE DEGREE OF B.S. IN AGRICULTURE, 1909

EARL WILLIAM AVERY was born in South Dakota in 1886. Graduated from the Ilion High School, 1904, and entered Cornell in the autumn of 1905 where he specialized in Animal Industry.

CORNELIUS MORRIS BENNETT was born near Ovid, Seneca County, New York, in January, 1885. His early life was spent on a farm. He entered the college as a special in 1905, but has changed to the regular course.

CHARLES FERDINAND BOEHLER was born at Camden, New York, April 20, 1886. In 1905, he graduated from Camden High School and entered Cornell in the Special Agricultural Course. In 1907, he changed to the regular course and since then has specialized in Landscape Architecture. Robert's Scholarship, (2); Supt. Poultry Show, (2); College baseball, (2, 3, 4); College Glee Club, (3, 4); College Soccer team, (4); Agricultural Banquet Committee, (4).

WALTER WEIDENFELD BONNS. Prepared at Milwaukee East Division High School, '95. B.S. in Architecture, Massachusetts Institute of Technology, '99. Engaged in architectural profession for a number of years. Gave up such work on account of poor health. After spending two seasons in practical horticulture entered winter course in Cornell, 06-07. Entered regular course, 1907. Registered as graduate student, Feb., 1909.

MANUEL ANASTASIO CENTURION, of Habana, Cuba, was born Aug. 29, 1887. His preparatory education was secured in the same city, entering Cornell, 1905. Agricultural Engineering is his ideal so he will continue in the University taking Civil Engineering. Member of College Crew, 1908; Vice-President of Club Hispano Americano.

LEE BRIGGS COOK was born in 1886, on a farm near Panama, N. Y. He prepared at Panama Union School and Lakewood High School, graduating from the latter in 1905. In the fall, he entered Cornell and has specialized in Dairy in which Department he is now an Assistant. Sackchord, Agr. crew in 1908.

TRACY EGBERT DAVIS was born in Buffalo, N. Y. He received his elementary education in the public schools of that city and later prepared for college at Masten Park High School. After graduation he will become superintendent of a 500 acre farm near Rochester, N. Y.

ASU-TOSH DUTT graduated in Arts from the University of Calcutta, '06. While working for his M.A. as an Instructor in mathematics he was elected by H. H., the Maharaja of Coochbehar to study Agriculture at Cornell from which he obtains his B. S. A. this year.

ELMER ELLSWORTH ELDREDGE was born at S. Lavoy Springs, N. Y., Oct. 8, 1884. He prepared at Sharon



Springs High School and entered Cornell with the class '09. Student Assistant in Bacteriology during Junior and Senior years. Expects to enter Experiment Station work or teaching.

ALICE CATHERINE EVANS was born on a farm at Neath, Pa. After graduating from Susquehanna Collegiate Institute, she taught three years and in 1905 entered the Cornell Nature-Study course. After completing this course, she registered as a regular student specializing in Bacteriology which line of work she intends to pursue. President Frigga Fylge.

DAVID HUMPHREY FULLERTON was born in the town of Apollo, Pa., in 1886. He attended high school at Princeton, N. J., and then entered Princeton University. At the end of his Sophomore year he discontinued study there and came to this college. Member of the Ag. College Glee Club. After returning from a year's study in Germany he expects to take up general farming.

DANIEL WELLS HALLOCK was born Oct. 28, 1885, at Rocky Point, Long Island, N. Y. He prepared for college at Cazenovia Seminary, Cazenovia, N. Y. While at Cornell he was a member of Long Island, Cosmopolitan and Cayuga Clubs. After a year or so more of study he intends to engage with his brother in the farming and mining business.

SHERMAN PRESTON HOLLISTER was born at Medina, Ohio, in 1884, but soon moved to Connecticut where he has resided since. He studied three years at the Connecticut Agricultural College and then was Assistant in Horticulture at the same place for two years before coming to Cornell in 1907 for further work in horticultural lines. Acacia, Cornell Masonic Club.

EDNA MARY JENKINS was born on a farm near Walton, N. Y. After graduating from the Walton High School she taught school one year. Miss Jenkins entered Cornell in 1905 and has taken a general course in Agriculture and Domestic Science. She expects to return to the home farm. President Frigga Fylge.

PAUL JUDSON, born Dec. 8, 1885, Lansing, Michigan. Attended Lansing High School, entered Univ. of Idaho, 1903, attended that institution two years. Worked one year in the mines of Northern Idaho. Entered Cornell, 1906, Arts. Feb., 1907, changed to Ag. Expects to become a fruit-grower.

ROLLA CECIL LAWRY, born Bowling Green, Missouri, in 1884. Prep. work Bowling Green Public School and University Preparatory School. Entered Cornell as Special in 1904-1905. Assistant in Poultry Husbandry in 1905-06. Instructor in Poultry Husbandry, 1906-07. Re-entered Cornell as regular student, 1907-08. Pres. C. U. Poultry Assn., 1908; pres. C. U. Agricultural Assn., 1909. Going into commercial egg farming at Pacific, Mo.

KENNETH CARTER LIVERMORE was born at Watertown, Mass., where he prepared at Phillips High School. Alpha Zeta; Agr. Football Team, 1904; University wrestling championship; welter weight class, 1906 and 1908; Captain Agr. Crew, 1908; Agr. Cross Country Team, 1908; speaker at Hearing Country Life Commission; Agr. Banquet speaker; Agr. Stage, 2d prize; Vice-Pres. Class '09, in Agr. Sigma Xi.

ERVIN GETMAN McCLOSKEY, age 22, prepared at the High School, Hamburg, N. Y., and entered Cornell in 1905. Student Extension Committee, (1); Cornell Countryman, (2); Business Manager, (3); Agr. Baseball, (1-2-3-4); Captain, (2); Banquet Committee, (3-4); chairman, (4); Springday Committee, (3-4); Spring Picnic, (2-4); chairman, (4); Student Representative Athletic Board of Control, (4); student assistant in Dairy Industry; Hebs-Sa; Alpha Zeta.

GROSVENOR CARLTON MANROW was born in Mentz, Cayuga Co., N. Y., April 16, 1889. Graduated from Port Byron High School. While in college, he has specialized in Agronomy and farm management with the intention of taking up practical farming as a life work.

GEORGE HARVEY MILLER comes from Buffalo where he prepared at Masten Park High School. He has specialized in Dairy and Horticulture, and has been prominent in Agricultural baseball activities. Member of Cayuga Club, Hebs-Sa; Junior Moakley House Fund; Banquet Committee; Class Day Committee; CORNELL COUNTRYMAN Board.

EDWIN WELLS MITCHELL comes from Cincinnati, where he prepared at the University School. He has specialized in Horticulture and Plant Industry and expects to do orchard work and later to grow an apple orchard in Northern New York. Hebs-Sa; Cayuga Club; Mandolin Club.

GEORGE WARREN MYER was born in Ovid, N. Y., March 6th, 1885. He received his elementary education in the district school and in Interlaken High School and The Cook Academy. He took one year in the special course and the next year changed to the regular. Alpha Zeta; College Basketball, 1906-7, 1907-8; College Baseball 1906-7-8, Captain, '09.

CHESTER CLARK NEAL, born in Boston, Mass., age 23. Prepared for college at Phillip's Exeter Academy. Entered Cornell from Pennsylvania State College in the fall of 1907. University Mandolin Club; Alpha Zeta.

TANOMO ODAIRA was educated in Toda Agricultural School and later specialized in Horticulture in the Imperial University of Sapporo, Hokkaido. After two years of study he was a teacher at Toda Agricultural School and an expert in the Agricultural Experiment Station at Toda. He entered Cornell in 1907, specializing in Horticulture and will continue in this work for an M. S. A. He is a member of the Cornell Cosmopolitan Club.

FRED EUGENE ROBERTSON. Born Feb. 18th, 1878, at Cambridge, Washington County, N. Y. Entered Cornell as a special student of Agriculture in 1901. He left in 1903 to superintend the Empire City Farms, Alleghany Co., N. Y. After an absence of three years he returned and prepared at the Ithaca High School for the regular College course.

REFXINE LATTING ROSSMAN of Martindale, N. Y., prepared at Hudson, N. Y., High School. He has not specialized, preferring to take a general course. Cayuga Club; Class Track Team, (2); varsity Track Team, (1-2-3-4); Junior Feed Committee; Senior General Committee; Hebs-Sa.

SYDNEY GODFREY RUBINO was born in Moscow, Russia. Prepared at Newark, N. J. High School. Specialized in Dairy Industry. Future occupation not decided upon.

VICTOR ISRAEL SAFRO prepared at the DeWitt Clinton High School of New York City. He has specialized in Entomology. Francis Miles Finch Debate Club; Class Debate Teams, (1-2); Agassiz Club, (Secretary); Cornell Prohibition League, Secretary (3); President, (4).

HART IRVING SEELY born at Spencer, N. Y., and prepared at Ithaca High School. After completing his course in Agriculture he will take up the management of his farms at Spencer, Tioga Co., N. Y. Sphinx Head; Hebs-Sa; Widow Board, (2), (3), (4); Business Manager *Widow*, (4); Chairman Senior Cap and Gown Committee; General Spring Day Committee, (3), (4); Chairman Agr. Spring Day Committee, (3); Ice Carnival Committee, (3); Masque, (1), (2); Chairman Agr. Song Book Committee.

EDWARD LOOMIS DAVENPORT SEYMOUR was born in Boston and received his elementary education in the schools of that city, Cincinnati and New York. A desire soon grew into a determination to live and work in the country, and he has completed a general course intending to go into practical farming. Editor *THE COUNTRYMAN*, 1907-8, 1908-9; Alpha Zeta; Sphinx Head; Hebs-sa; Class, Junior Varsity and Varsity 4-oared Crews; Varsity Soccer team; 1909 Class Book; Secretary Class of 1909 Agriculture.

VAHAN EPIPAN SIRAMARKIAN, was born at Constantinople, Turkey, in 1884. Followed the study of Greek, 1896-1900 at Adrianople. In 1900, he entered Robert College at Constantinople and leaving there in 1904.

decided to enter Cornell and take up the study of Agriculture, in the fall of 1906. Mr. Siramarkian intends to take up graduate work later.

FREDERICK BURDETTE SPRAGUE was born at Smyrna, Chenango County, N. Y., Dec. 7, 1881. Received his early education in the district and village schools. He taught school for one year and after a year in the Ithaca High School entered Cornell Agricultural College in fall of '05. Francis Miles Finch Debate Club; Cornell Congress; Interclass Debate Team; Inter-college Track Team; Varsity Track Team. He will return to do general farming on Smyrna Hill.

CHARLES JACOB STEIN was born in Buffalo, N. Y., and received his preparatory education at Masten Park High School of that city. Sophomore Smoker Committee; Varsity Track Team, (3); Class Day Committee; Scalp and Blade; Hebs-Sa, and Cerebus.

ARTHUR WATSON SWEETON was born May 20th, 1886, in Canton Center, Conn. After graduating from the Collinsville High School, he spent a year working on the home farm. The next two years were spent at the Connecticut Agricultural college and then, after working on the home farm for another year, he came to Cornell in the fall of '07. He expects to go into farm management work.

EDWARD HERRMANN THOMSON, age 22, comes from Delhi, Delaware Co. N. Y. He has specialized in Dairy and Farm Management, with the intention of following this work for a few years, after which he hopes to return to the home farm. Hebs-Sa, Cayuga Club, Agriculture, '09, Class President; Agr. Banquet Committee,

(3); Spring Day Committee, (3); Round-Up Club; College Crew, (3); Pres. Delaware Co. Club.

MILLER AMASA TRAVIS, age 23, was born in Woodhull, N. Y., where he later attended the district school. He afterwards went to Greenwood Union School, graduating in 1903 and on the completion of a two years post-graduate course he entered Cornell in 1905. Mr. Travis was Secretary and Treasurer of the Cornell University Poultry Association, '08-'09.

OLIVER DIBBLE TULLER was born in town of Simsbury, Conn. He attended the Shelton High School and Westminster Academy then entered Conn. Ag. Col., spending three years there. After two years of practical experience in farming he entered Cornell in fall of '07, as a Junior. He expects to be a farmer.

STEPHEN FRANKLIN WILLARD, JR., was born in Wethersfield, Conn., on Nov. 1, 1885. He graduated from the Hartford High School in 1904 and from Cushing Academy in 1905, entering Cornell in the fall of '05. While here he has been actively interested in college activities. He was elected to the COUNTRYMAN Board in his Sophomore year, becoming Business Manager in his Senior year. He has specialized in Plant Breeding. Is a member of Alpha Zeta, Hebs-Sa and Sigma Xi.

GEORGE NORTON WOLCOTT was born July 12th, 1889, at Yorkville, Oneida Co., New York. He prepared at the Utica Free Academy and on entering Cornell pursued the regular course in Agriculture. He has specialized in Entomology and hopes to go into Experiment Station work.

The COUNTRYMAN regrets to announce that it has been unable to secure write-ups of the following:

#### CANDIDATES FOR DEGREE OF Ph.D.

ORA SHERMAN MORGAN.

DONALD REDDICK.

#### CANDIDATES FOR M.S. IN AGRICULTURE

LEON DEXTER BATCHELOR.

CHRISTIAN NEPHI JENSEN.

GEORGE JOHN BOUYOUCOS.

LOLA ALEXANDER NIVEN.

LLEWELLYN RHYS DAVIES.

JACOB TAUBENHAUS.

#### CANDIDATES FOR B.S. IN AGRICULTURE

E. L. BAKER.

T. OGATA.

P. H. CORMAN.

W. H. STARK.

M. JACK.

F. E. WURST.

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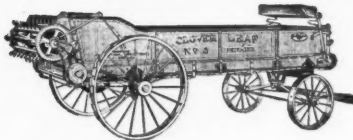
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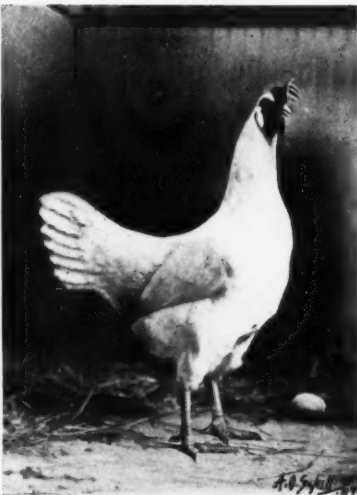
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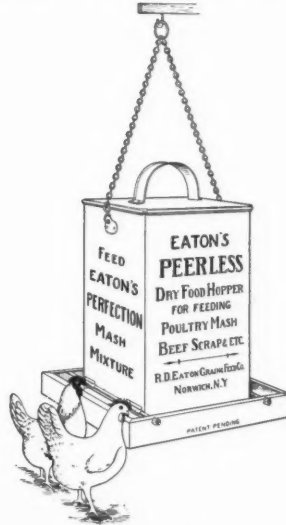
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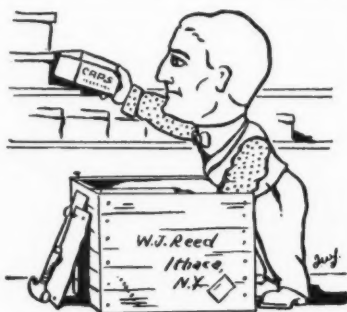
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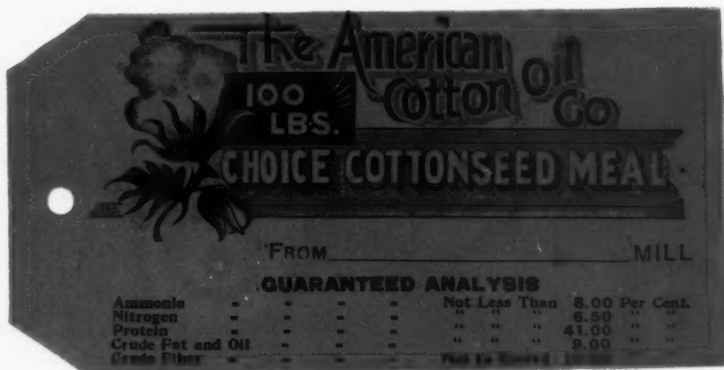
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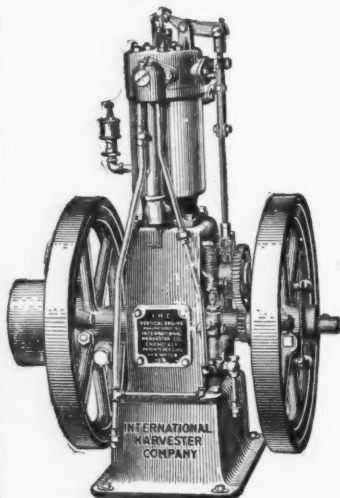
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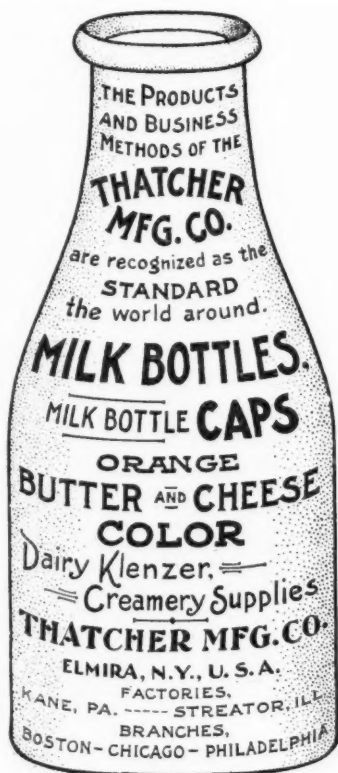
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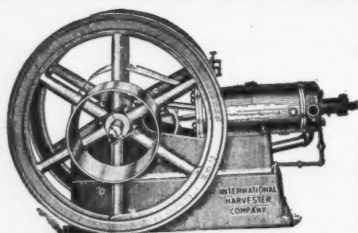
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